Name: ____Solutions_____

Cosumnes River College
Principles of Macroeconomics
Problem Set 4
Due March 8, 2017

Spring 2017 Prof. Dowell

Instructions: Write the answers clearly and concisely on these sheets in the spaces provided. Do not attach extra sheets.

1. a. Write out the equation for the consumption function in algebraic form and identify each component.

   $C = a + bY$

   C = consumption expenditure
   a = autonomous consumption
   b = MPC or marginal propensity to consume
   Y = income

   b. Assume a consumption function that takes on the following algebraic form: C = $100 + .8Y. Assume that Y = $1000 what is the level of consumption at this income level.

   $$C = 100 = 0.8(1{,}000) = 900$$

   c. Suppose the slope of the consumption function is .75 and there was an increase in income of $100. Calculate the increase in consumption.

   $$\Delta C = 0.75(100) = 75$$

2. Compare and contrast the MPC and the MPS. Also explain what these two figures must always add up to.

   The MPC is the marginal propensity to consume or the change in consumption resulting from a $1 change in income. The MPS is the marginal propensity to save or the change in saving resulting from a $1 change in income. Since, by definition, Y = C + S, or Y – C = S, meaning whatever isn't consumed is saved, any change in income must be split between consumption or saving, resulting in the requirement that MPC + MPS = 1

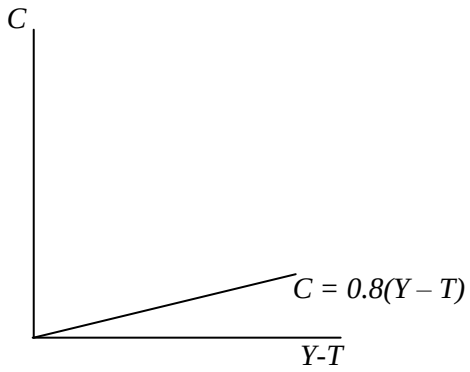
3. Critically evaluate the following statement. "People can spend more than their income by borrowing therefore the sum of the MPC and the MPS could actually be greater than one.
   This is false. When people spend more than their income by borrowing, they are dissaving. The MPC then might exceed one, but the MPS would be negative and the MPC and MPS still sum to one. Note that as we discussed in class, an individual can do this, but a society as a whole cannot.

4. Assume a consumption function of the form C = 200 + .8Y. Derive the saving function and write out the algebraic representation.

   $Y = C + S \Rightarrow Y = 200 + 0.8Y + S \Rightarrow S = Y - 200 - 0.8Y \Rightarrow S = -200 + 0.2Y$

5. Draw a graph of the consumption function and determine the MPC and the level of autonomous consumption given the following data.

Year	Disposable Income	Consumer Spending
2011	$1,500	$1,200
2012	1,800	1,440
2013	2,100	1,680
2014	2,400	1,920
2015	2,700	2,160



The MPC is simply the slope. Since this is a linear consumption function, the slope is just the rise over the run. Using the years 2011 and 2015 we have

$$(2{,}160-1{,}200)/(2{,}700-1{,}500) = 960/1200 = 0.8$$

To find autonomous consumption (and the equation for the consumption function) use the point slope formula $y - y_1 = m(x - x_1)$ or $C - 1{,}200 = 0.8(Y^D - 1{,}500) \Rightarrow C - 1{,}200 = 0.8Y^D - 1{,}200 \Rightarrow C = 0.8Y^D$. *Since the intercept is zero, we can conclude autonomous consumption is zero.*

6. For each of the following, state the effect on the consumption function and explain why:

   a. An increase in the nominal value of stocks and real estate

      This increases expected lifetime real wealth and hence shifts the consumption function upward.

   b. An increase in the price level

      This decreases expected lifetime real wealth and hence shifts the consumption function downward.

   c. An increase in expected future real wealth

      This increases expected lifetime real wealth and hence shifts the consumption function downward.

7. Explain why permanent tax cuts are likely to lead to bigger increases in consumer spending than temporary tax cuts.

   A permanent tax cut increases expected lifetime wealth and increases autonomous consumption, shifting the consumption function upward. This is in addition to the effect of increasing disposable income in the period of the tax cut which is all that occurs with a temporary tax cut.

8. Suppose the price of imported goods goes down. What happens to Consumption, Imports and Net Exports?

   The declining price of imports will reduce the overall price level, increasing the real value of expected lifetime wealth and shifting the consumption function upward, resulting in an increase in consumption. Imports will increase as consumers substitute now relatively cheaper imported goods for now more relatively expensive domestically produced goods. Net exports will fall both because imports are rising, but also because exports will fall as foreigners buy more of their own now relatively cheaper goods and fewer of our now relatively more expensive goods (our exports).

9. Suppose you are given the following:

   $C = \omega/P + 0.75(Y - T)$
   $\omega = 200$
   $P = 4$
   $Y = 2{,}000$
   $T = 500$

   a. Solve for C.

      Plug in the relevant values and solve:

      $$C = 200/4 + 0.75(2{,}000 - 500) = 50 + 0.75(1{,}500) = 50 + 1{,}125 = 1{,}175$$

   b. Suppose that net taxes (T) increase to 1,000. Solve for the new level of consumption.

      $$C = 200/4 + 0.75(2{,}000 - 1{,}000) = 50 + 0.75(1{,}000) = 50 + 750 = 800$$

   c. Suppose now that P falls to 2. Solve for the new level of consumption.

      $$C = 200/2 + 0.75(2{,}000 - 1{,}000) = 100 + 0.75(1{,}000) = 100 + 750 = 850$$