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CEA **Solution set #2**

Chapter 3. Q4- Using relation (3.7):
a)- By 1/(1– c1) b)- By c1/(1-c1)
c)- Because, one unit increase in G increases the demand for goods and services by exactly by one unit in the first round of spending. But one unit increase in T reduces the demand by only c1 unit of demand in the first round of spending, and the rest 1-c1 is deducted from the families' savings.
d)- Total change in GDP would be equal to one, the difference between changes in parts a and b, because:

$[1/(1-c1)] - [c1/(1-c1)] = 1$

e)- As you can see propensity to consume does NOT have any effect at all. The so called balanced budget multiplier is one, no matter what propensity to consume is.

Chapter 3. Q5-
a)- Obviously, t1 is less than one, because government can collect only a portion of the income.
b)-
$Z = C + G + I \rightarrow Z = c0 + c1*Yd + G + I \rightarrow Z = c0 + c1*(Y - T) + G + I$
$\rightarrow Z = c0 + c1*(Y - t0 - t1*Y) + G + I \rightarrow Z = c0 + c1*Y - c1*t0 - c1*t1*Y + G + I$

On the other hand, by the condition for the equilibrium we have: $Y = Z$.

Therefore: $Y = c0 + c1*Y - c1*t0 - c1*t1*Y + G + I$
Or equilibrium output:

$$Y = \frac{1}{(1 - c1 + c1*t1)}[c0 - c1*t0 + G + I]$$

c)- In this case, multiplier is 1/(1-c1+c1*t1), as opposed to 1/(1-c1) in our original textbook case. But we know that $c1*t1 > 0$, because c1, and t1 are positive numbers. Thus, $[1/(1-c1+c1*t1)] < [1/(1-c1)]$, meaning that multiplier in this case is smaller than the traditional case, so economy would be somewhat less responsive to the government fiscal policies, i.e. changes in G.

d)- Because, when GDP and income tend to increase, and there are signs of overheating of the economy, and danger of inflation in future, the taxes, T, which are proportional to income, go up automatically and prevent additional increases in GDP. On the other hand, when GDP and income tend to slow down, and there are signs of a recession, the taxes, which are proportional to income, go down automatically and lean against further decreases in GDP.

Chapter 4 Q1:
a. False. Income is a flow variable, while wealth is a stock variable.

b. False. Changes in interest rate can change the opportunity cost of holding money, so the demand for money.

c. If the total wealth and demand for money are known, then the difference would determine the demand for bonds.

d. True. They can increase the money velocity. (See the example below)

e. False. These two move in opposite directions. Because L(i) is an decreasing function in i. [$Y/M= 1/L(i)]

f. False. Selling bonds by central bank leads to lower money supply.

g. Price of bonds and interest rate always move in opposite direction

Chapter 4. Q4.

a)-

$20 = 100 (0.25 - i) \rightarrow i = 5\%$

b)-

$M1 = 100 (0.25 – 0.02) \rightarrow M = 23$
$M2 = 100 (0.25 – 0.12) \rightarrow M = 13$

The Central Bank must decrease money supply by 10.

Chapter 4. Q5.

a).

$M^d = \$Y(0.35 – i) \rightarrow$ Demand for Bonds: $M^b = W – \$Y(0.35 – i)$, where W is the wealth

$i= 2\% \rightarrow M^b = 50000 – 60000(0.35 – 0.02) = 30200$

$i= 12\% \rightarrow M^b = 50000 – 60000(0.35 – 0.12) = 36200$

When interest rate goes up, demand for bonds goes up, because bonds have higher return now.

b). In our model, wealth does not have any effect on demand for money, but has positive relationship with demand for bonds.

c). In our model income has positive relationship with the demand for money, and negative effect on demand for bonds. However, in reality its effect on demand for bonds is ambiguous, depending on how much it increases the saving (so wealth) or consumption.

d). The word “money”, which is used in the first part, is used in fact for income. So the sentence can be modified as: “When people earn more income they obviously want to hold more money. As far as the relationship between income and demand for bond concern, as it is said in part (c), in our model it is negative but in general the relationship can go either way.

Question 3:
a- People need to keep less money, because with internet banking, withdrawing money is less costly, then can happen more frequently, now (see question #7 to see how it exactly works). At any given levels of income and interest rate, the demand for money would be lower. So demand function shifts in (shift to the left).

b. As it is in part a, after introduction of Internet banking the demand for money would be lower at any level and interest rate, and income, so only function (ii) can show this property comparing the original function.