

PRACTICE QUESTIONS FOR MIDTERM II

Question 1: True-False. Please explain your choice.

a) If the economy is not in a long-run equilibrium and other things are equal, then prices will eventually adjust to bring the economy to a long-run equilibrium.

T F

TRUE

b) The aggregate production curve has a slope of less than one.

T F

FALSE

c) The smaller the *mpe*, the more repercussions there are from a change in expenditures or production and hence the greater is the multiplier.

T F

FALSE

d) By law, the Fed cannot act as a lender of last resort to commercial banks in need.

T F

FALSE

e) An increase in the discount rate is a signal that the Fed wants an easier monetary policy.

T F

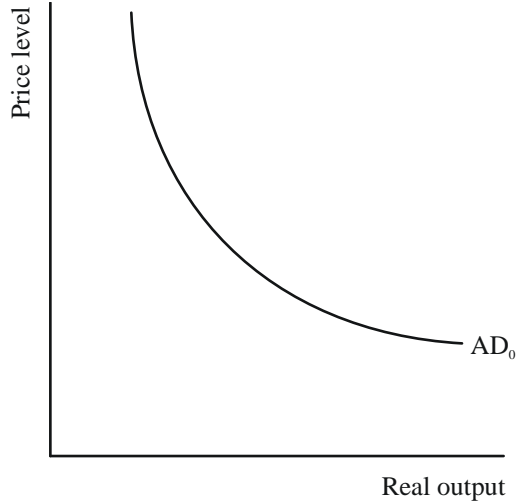
FALSE

f) The Federal funds rate is the rate the Fed charges commercial banks for any loans it extends to them.

T F

FALSE

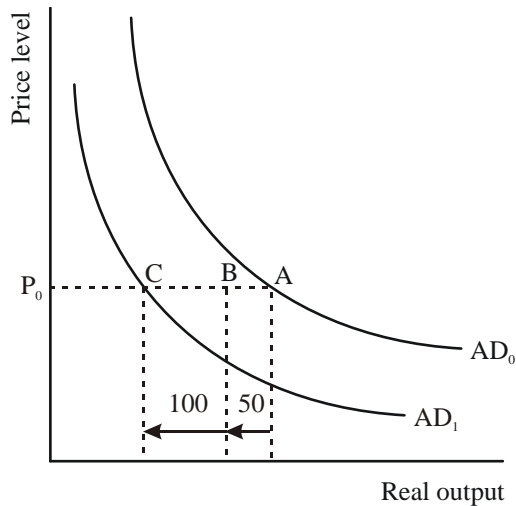
Question 2: Consider the following diagram



Demonstrate graphically and explain verbally the impact of a decrease of 50 in government spending on the AD curve in the diagram when the multiplier is 3.

Answer:

The diagram:



The explanation:

The total impact of the decrease of 50 of government spending is a leftward shift of the AD curve from AD_0 to AD_1 . This shift occurs as a result of two things. The initial effect is the decrease in government spending of 50. This can be viewed as the movement along the P_0 line from point A to point B. As a result of the initial decrease in spending, the multiplier process takes over. The multiplier effect is illustrated by the movement along the P_0 price line from point B to point C. Using a multiplier of 3 this results in a total drop in real output (A to C) of 150.

Question 3: What is meant by the term *induced expenditures*? Provide an example.

Answer:

Induced expenditures refers to expenditures that are a function of income. For example, a person may spend, say, \$4,000 per year regardless of their income, on basic necessities of life. But people who have higher incomes will eat better (and more expensive) food, live in nicer (and more expensive) homes, and spend more money on entertainment, luxury items, etc. than those who are just struggling to get by. As people's incomes rise, they tend to spend some portion of the additional income (the mpc), and in that sense, expenditures are induced by rises in income.

Question 4: Answer parts (a) - (e) below on the basis of the following table.

Income (Y)	Change in Income (ΔY)	Aggregate Expenditures (AE)	Change in Aggregate Expenditures (ΔAE)
0		500	
500		950	
1000		1400	
1500		1850	
2000		2300	
2500		2750	
3000		3200	

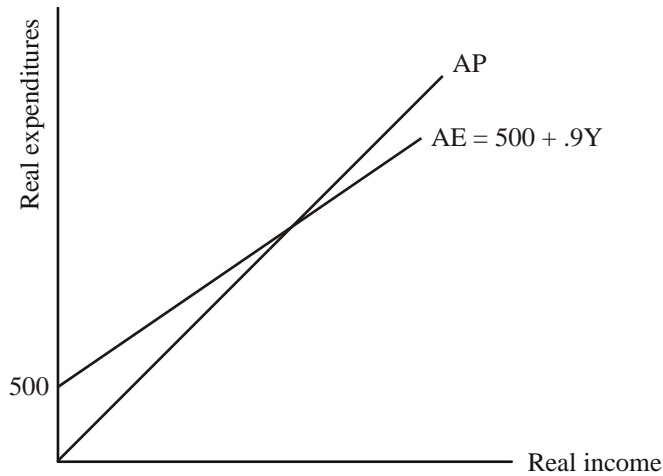
- (a) Fill in columns (2) and (4).
- (b) What is the value of autonomous expenditures?
- (c) What is the mpe?
- (d) What is the AE equation?
- (e) Draw a picture of the AE curve.

Answer:

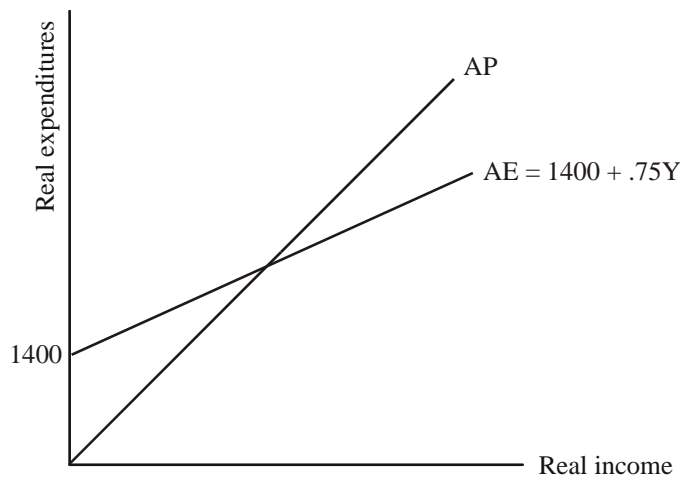
(a) The completed table:

Income (Y)	Change in Income (ΔY)	Aggregate Expenditures (AE)	Change in Aggregate Expenditures (ΔAE)
0		500	
500	500	950	450
1000	500	1400	450
1500	500	1850	450
2000	500	2300	450
2500	500	2750	450
3000	500	3200	450

- (b) Autonomous expenditures are 500.
- (c) The mpe = $450/500 = 0.9$.
- (d) The AE equation is $AE = 500 + .9Y$
- (e) The diagram:



Question 5: Consider the following multiplier model diagram:



- (a) What is the value of equilibrium income?
- (b) Demonstrate graphically and explain verbally the impact on equilibrium income of an increase in government spending of 100.
- (c) Explain why the change in equilibrium income exceeds the change in government expenditures in your answer for part (b).

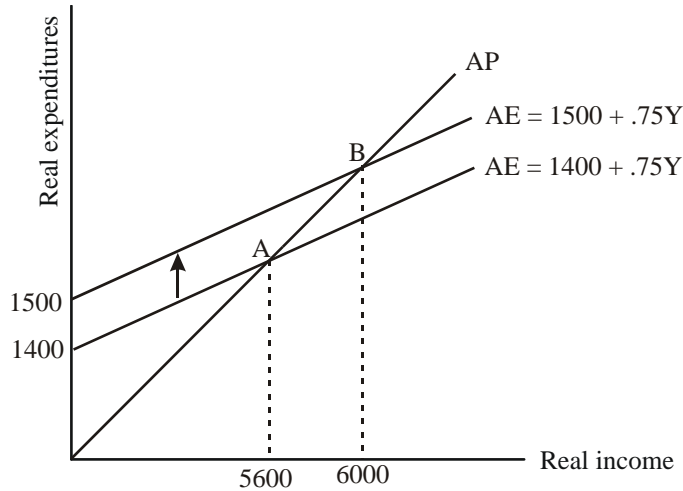
Answer:

- (a) Find equilibrium income using the multiplier equation:

$$Y = \text{Multiplier} * \text{Autonomous Expenditures}$$

$$\begin{aligned}
 &= 1/(1-mpe) * AE \\
 &= 1/(1-.75) * 1400 \\
 &= 5600.
 \end{aligned}$$

(b) The diagram:

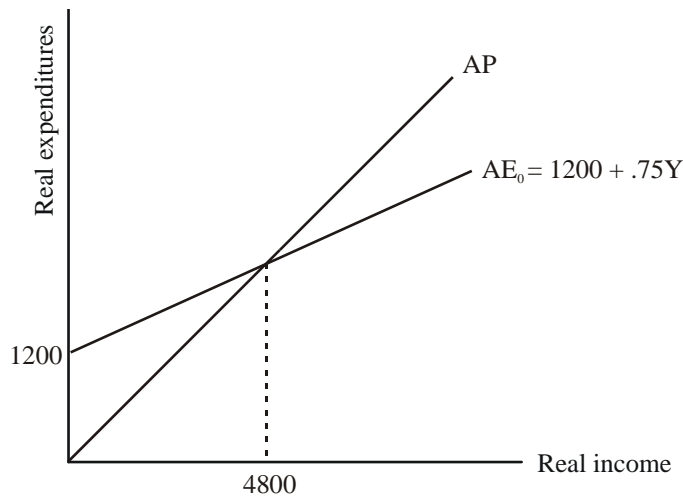


The explanation:

The increase in government spending will shift the AE up to $AE = 1500 + .75Y$. This results in a change in equilibrium from point A to point B. At point B the new equilibrium is $Y = 6000$. This is calculated via the multiplier equation as $Y = 4 * 1400$.

(c) The reason that the change in income is greater than the change in government expenditures is due to the impact of the multiplier; this is the multiplier effect in action.

Question 6: Consider the following multiplier model diagram:



For each of the following, draw a picture to show what would happen to the equilibrium level of income in the economy.

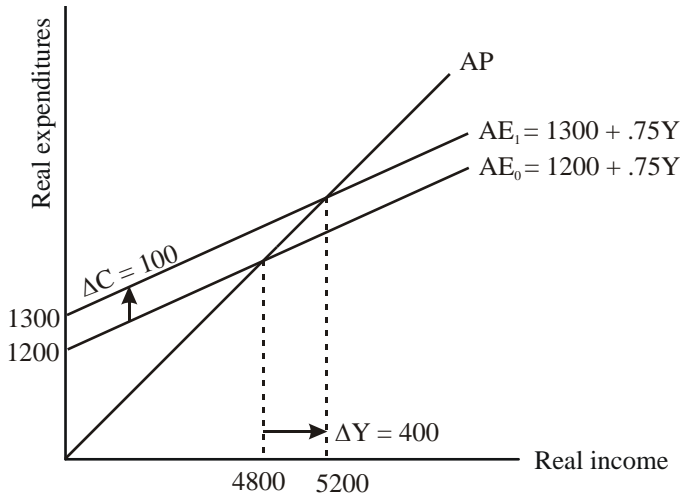
- (a) Consumer sentiment about the future improves resulting in an increase in autonomous consumption of 100.
- (b) Foreign economic activity rises, which results in an increase in autonomous exports of 100.
- (c) Because the average life span increases, many people are saving more of their income than ever before. Consequently the mpe falls from .75 to .66.

Answer:

(a) The increase in autonomous consumption ($\Delta C = 100$) results in the AE curve shifting up by the amount of the change in consumption to AE_1 . This shift up of AE results in an increase in equilibrium income to 5200. The increase in the level of income is found using the multiplier equation:

$$\begin{aligned}
 Y &= \text{multiplier} * \text{autonomous spending} \\
 Y &= 1/(1-.75) * 1300 \\
 Y &= 4 * 1300 \\
 Y &= 5200.
 \end{aligned}$$

Notice that the change in income is greater than the change in expenditures. Why is this the case? This is the multiplier process at work. In fact, the value of the change in income = multiplier * change in autonomous consumption ($400 = 4 * 100$). The diagram:



(b) The increase in autonomous exports ($\Delta X = 100$) results in the AE curve shifting up by the amount of the change in exports to AE_1 . This shift up of AE results in an increase in equilibrium income to 5200. The increase in the level of income is found using the multiplier equation as in part (a) above:

$$\begin{aligned}
 Y &= \text{multiplier} * \text{autonomous spending} \\
 Y &= 1/(1-.75) * 1300 \\
 Y &= 4 * 1300 \\
 Y &= 5200.
 \end{aligned}$$

Here again, the change in income is greater than the change in exports due to the multiplier process. The diagram is similar to that for part (a) above, except that the ΔC is replaced by ΔX .

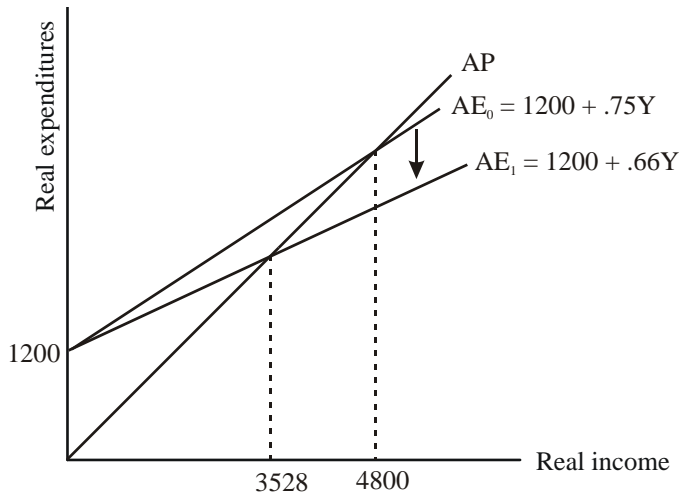
(c) The drop in the mpe from .75 to .66 results in the AE curve becoming flatter, resulting in a smaller equilibrium level of income. Why so? With people saving more, the mps increases, so that the multiplier is smaller than before. This results in less expansion of the initial amount of autonomous expenditures, so that the AP=AE point occurs at a smaller income level than previously. The new equilibrium income level can be found via the multiplier equation:

$$Y = \text{multiplier} * \text{autonomous spending}$$

$$Y = 1/(1-.66) * 1200$$

$$Y = 2.94 * 1200$$

$$Y = 3528.$$



Question 7: Suppose the monetary base is \$100 billion, banks hold 10% reserves, and the cash-to-deposit ratio is 15%.

- What is the money supply?
- Suppose the Fed wants to increase the money supply so it undertakes a \$10 billion open market purchase but at the same time people decide to hold twice as much cash as they did before. Will the Fed be successful in its attempt to increase the money supply? Explain.
- What lesson for monetary policy can you deduce from your answer to (b)?

Answer:

$$\begin{aligned}
 \text{(a) The money supply} &= \text{monetary base} * \text{money multiplier} \\
 &= \$100 \text{ billion} * 1/(r + c) \\
 &= \$100 \text{ billion} * 1/(\text{.10} + \text{.15}) \\
 &= \$100 \text{ billion} * 1/.\text{25} \\
 &= \$100 \text{ billion} * 4 \\
 &= \$400 \text{ billion.}
 \end{aligned}$$

That is, the money supply is \$400 billion.

(b) The Fed will not be successful in increasing the money supply. The money supply will actually fall to \$275 billion. The reason is because people are keeping more money out of the banking system than the Fed is putting in. The calculations:

$$\begin{aligned}
 \text{The money supply} &= \text{monetary base} * \text{money multiplier} \\
 &= \$110 \text{ billion} * 1/(r + c) \\
 &= \$110 \text{ billion} * 1/(\text{.10} + \text{.30}) \\
 &= \$110 \text{ billion} * 1/.\text{4} \\
 &= \$110 \text{ billion} * 2.5 \\
 &= \$275 \text{ billion.}
 \end{aligned}$$

(c) The lesson for monetary policy is that the Fed may often have trouble figuring out what policy it is using. Here it was attempting to expand the money supply but observed that the money supply actually contracted.

Question 8: Assume the money supply is \$1000, the velocity of money is 12, and the price level is \$4. Using the quantity theory of money:

- (a) Determine the level of real output.
- (b) Determine the level of nominal output.
- (c) Assuming velocity remains constant, what will happen if the money supply rises by 10%?

Answer:

- (a) Use the equation of exchange to determine real output:

$$\begin{aligned}MV &= PQ \\ \$1000 * 12 &= \$4 * Q \\ Q &= 3000\end{aligned}$$

- (b) Nominal output is $PQ = \$12,000$.
- (c) A 10% increase in the money supply will result in a 10% increase in prices. Using the quantity theory of money, we assume that V and Q are both constant. Thus when M increases by 10% to \$1100, prices must increase to \$4.4 in order for the equation of exchange to hold.