

Extra Review Questions and Answers for Chapter 10

B. Answers to Short-Answer, Essays, and Problems

1. Whenever there is a shift in the investment schedule and/or the consumption-saving schedules, there will be a new equilibrium level of GDP. Explain why this is so.

A shift in the investment schedule and/or the consumption schedule indicates that aggregate expenditures have changed. Therefore, the new aggregate expenditures level will not be equal to the original level of aggregate output. Real GDP must expand or contract until aggregate expenditures and aggregate output are once again equal at a new equilibrium. [text: Figure 10-1 E pp. 182-183; MA pp. 182-183]

2. Whenever there is an upshift or downshift in aggregate expenditures due to a change in one of its nonincome determinants, the equilibrium GDP changes by a multiple of the initial change in spending. Explain this multiplier effect.

The economy is characterized by repetitive, continuous flows of expenditures and income through which dollars spent by one group are received as income by another group. Any shift in aggregate expenditures will cause a chain reaction where a group whose income changes because of the spending change will in turn have a new level of spending which reflects their new level of income. When their spending increases or decreases, another group will find its income affected. Their spending will change by a fraction of that amount and so on. The end result of the initial change in spending will be several rounds of changes in income and spending so that the final impact on the economy's GDP is a multiple of the original change in spending. [text: E pp. 183-184; MA pp. 183-184]

3. Define the multiplier. How is it related to real GDP and the initial change in spending? How can the multiplier have a negative effect?

The multiplier is simply the ratio of the change in real GDP to the initial change in spending. Multiplying the initial change in spending by the multiplier gives you the amount of change in real GDP. The multiplier effect can work in a positive or a negative direction. An initial increase in spending will result in a larger increase in real GDP, and an initial decrease in spending will result in a larger decrease in real GDP. [text: E p. 183; MA p. 183]

New 4. What are two key facts that serve as the rationale for the multiplier effect?

First, the economy has continuous flows of expenditures and income in which income received by one person comes from money spent by another person who in turn receives income from the spending of another person, and so forth. Second, any change in income will cause both consumption and saving to vary in the same direction as the initial change in income, and by a fraction of that change. The fraction of the change in income that is spent is called the marginal propensity to consume (MPC). The fraction of the change in income that is saved is called the marginal propensity to save (MPS). The significance of the multiplier is that a small change in investment plans or consumption-saving plans can trigger a much larger change in the equilibrium level of GDP. [Text: E pp. 183-184; MA pp. 183-184]

5. Explain the economic impact of an increase in the multiplier.

The multiplier magnifies the fluctuations in economic activity initiated by changes in investment spending, net exports, government spending, or consumption spending. The larger the multiplier the greater will be the impact of any changes in spending on real GDP. [text: E pp. 183-184; MA pp. 183-184]

6. What is the relationship between the multiplier and the marginal propensities?

The multiplier is directly related to the marginal propensities. By definition, the multiplier is related to the marginal propensity to save because it equals $1/MPS$. Thus, the multiplier and the MPS are inversely related. The multiplier is also related to the marginal propensity to consume because it also equals $1/(1-MPC)$. [text: E pp. 184-186; MA pp. 184-186]

New 7. Describe the relationship between the size of the MPC and the multiplier. How does it compare to the relationship between the size of the MPS and the multiplier?

The size of the MPC and the multiplier are directly related. The size of the MPS and the multiplier are inversely related. In equation form, the multiplier = $1 / MPS$, or the multiplier = $1 / (1-MPC)$. [text: E pp. 184-186; MA pp. 184-186]

8. What is the difference between the simple multiplier and the complex multiplier?

The simple multiplier ($1/MPS$) reflects only the leakage of income into saving. There can also be other leakages of income from taxes or imports. It is better to think of the denominator for the multiplier in more general terms as “the fraction of the change in income which leaks or is diverted from the income stream.” When all these leakages — saving, taxes, and import spending — are added to the denominator of the multiplier, they reduce the size of the multiplier effect. [text: E p. 186; MA p. 186]

9. (Advanced analysis) Assume the following output-income and saving data for the private sector of the economy.

<u>Real GDP (Y)</u>	<u>Consumption (C)</u>
\$240	\$244
260	260
280	276
300	292
320	308
340	324
360	340
380	356
400	372

- (a) Describe the consumption schedule in equation form.
- (b) Assuming net investment is \$5 billion and independent of the level of GDP, what will be the equilibrium level of GDP?
- (c) Assuming net investment of \$15 billion and independent of the level of GDP, what will be the equilibrium level of GDP?
- (d) Using your answers to (a) and (b), find the size of the multiplier.
- (e) Check your answer using the MPC embodied in these data.
- (a) $C = 60 + 0.8Y$
- (b) Equilibrium GDP = \$325 (where $S = I$)
- (c) When $I = \$15$, GDP rises to \$375 because that is where $S = I$.
- (d) When I rose by \$10, GDP rose by \$50. Therefore, $M = 50/10 = 5$.
- (e) The MPC would be 0.8 or $4/5$ because C changes by 20 when GDP changes by 25. Therefore $MPC = 20/25$ or 0.8 and the $MPS = 0.2$ which makes the multiplier $1/.2$ or 5, the same result found in part (d). [text: E pp. 182-186; MA pp. 182-186]
10. (Advanced analysis) Assume the consumption schedule for the economy is such that $C = 50 + 0.8Y$. Assume further that investment and net exports are autonomous or independent of the level of income and gross investment is 40 and net exports equal -10 . Recall that in equilibrium, $Y = C + I_g + X_n$.
- (a) Calculate the equilibrium level of income for this economy.
- (b) What will happen to equilibrium Y if gross investment falls to 20? What does this tell us about the size of the multiplier?

- (a) Equilibrium GDP is $400 = (50 = 0.8Y) + 40 + (-10)$
(b) If gross investment falls by 20, GDP will fall by 100 because the multiplier is $1/0.2$ or 5 and $5 \times 20 = 100$ decline. The new equilibrium would be 300. [text: E pp. 182-188; MA pp. 182-188]

New 11. What is the effect of net exports, either positive or negative, on equilibrium GDP?

Positive net exports increase aggregate expenditures beyond what they would be in a closed economy and thus have an expansionary effect. The multiplier effect also is at work. Positive net exports will lead to a positive change that is greater than the amount of the initial change. Negative net exports decrease aggregate expenditures beyond what they would be in a closed economy and thus have a contractionary effect. The multiplier effect also is at work here. Negative net exports lead to a negative change in equilibrium GDP that is greater than the initial change. [text: E pp. 187-188; MA pp. 187-188]

12. Explain why exports are added to, and imports are subtracted from, aggregate expenditures in moving from a closed to an open economy.

Exports must be added to aggregate expenditures because they represent sales of current output which would not have been counted elsewhere in summing up total expenditures. Imports must be subtracted from aggregate expenditures because they would be included in any summing of expenditures on final goods and services, but they do not represent goods or services produced here. Thus, to have an accurate estimate of domestic production, their value must be subtracted from the total expenditures. [text: E pp. 186-188; MA pp. 186-188]

13. Evaluate the statement that “for an open economy the equilibrium GDP always corresponds with an equality of exports and imports.”

This statement would be true only by coincidence, if ever. Equilibrium GDP (in the absence of government) exists when aggregate demand equals aggregate supply (GDP). Aggregate private demand consists of three components: C , I_g , and net exports. There is no reason why net exports must equal zero. The only requirement is that the sum of the three components, C , I_g , and $(X - M)$ sum to the same value as aggregate supply. At that point GDP will be in equilibrium. C or I_g or X or M or any or all of these can adjust in a situation where disequilibrium exists, but equilibrium doesn't necessitate net exports of zero. [text: E pp. 186-188; MA pp. 186-188]

14. When international trade is considered, explain how net exports could be either positive or negative additions to aggregate demand. In which case would the impact of net exports be expansionary? Explain.
When exports exceed imports, net exports are a positive addition to aggregate demand. When imports exceed exports, net exports are a

negative addition to aggregate demand because more money is being spent on products from other countries than foreigners are spending on products made in the United States. Rather than adding to aggregate demand this latter situation is a leakage from total expenditures. In the case where net exports are positive and growing, their impact would be expansionary. [text: E pp. 186-188; MA pp. 186-188]

15. How does the fact that imports vary directly with GDP affect the stability of the domestic economy?

Actually this fact should help stabilize the domestic economy. During inflationary periods of rapid growth, rising imports should dampen that growth in domestic aggregate demand. During recessionary periods, the decline in imports should help to offset falling domestic demand as net exports should rise. In other words, a smaller M makes the $(X - M)$ balance grow. [text: E pp. 186-188; MA pp. 186-188]

16. The data in the first two columns below are for a closed economy. Use this table to answer the following questions.

Real GDP = DI (billions)	Aggregate expenditures (billions)	Exports (billions)	Imports (billions)	Net exports (billions)	Aggregate expenditures (billions)
\$100	\$120	\$10	\$15	\$___	\$___
125	140	10	15	___	___
150	160	10	15	___	___
175	180	10	15	___	___
200	200	10	15	___	___
225	220	10	15	___	___
250	240	10	15	___	___
275	260	10	15	___	___

- (a) What is the equilibrium GDP for the closed economy?
- (b) Including the international trade figures for exports and imports, calculate net exports and determine the equilibrium GDP for an open economy.
- (c) What will happen to equilibrium GDP if exports were \$5 billion larger at each level of GDP?
- (d) What will happen to equilibrium GDP if exports remained at \$10 billion, but imports dropped to \$5 billion?
- (e) What is the size of the multiplier in this economy?

Real GDP = DI (billions)	Aggregate expenditures (billions)	Exports (billions)	Imports (billions)	Net exports (billions)	Aggregate expenditures (billions)
\$100	\$120	\$10	\$15	\$-5	\$115
125	140	10	15	-5	135
150	160	10	15	-5	155
175	180	10	15	-5	175
200	200	10	15	-5	195
225	220	10	15	-5	215
250	240	10	15	-5	235
275	260	10	15	-5	255

- (a) For a closed economy, equilibrium GDP = \$200 billion.
- (b) For an open economy, equilibrium GDP = \$175 billion.
- (c) Equilibrium GDP would return to \$200 billion.
- (d) Equilibrium GDP would rise to \$225 billion.
- (e) When aggregate expenditures change by 5, equilibrium GDP changes by 25 so the multiplier must be 5. [text: E pp. 186-188; MA pp. 186-188]

17. The data in the first two columns below are for a closed economy. Use this table to answer the following questions.

Real GDP = DI (billions)	Aggregate expenditures (billions)	Exports (billions)	Imports (billions)	Net exports (billions)	Aggregate expenditures (billions)
\$ 80	\$100	\$15	\$5	\$___	\$___
120	130	15	5	___	___
160	160	15	5	___	___
200	190	15	5	___	___
240	220	15	5	___	___
280	250	15	5	___	___
320	280	15	5	___	___
360	310	15	5	___	___

- (a) What is the equilibrium GDP for the closed economy?
- (b) Including the international trade figures for exports and imports, calculate net exports and determine the equilibrium GDP for an open economy.
- (c) What will happen to equilibrium GDP if exports were \$10 billion larger at each level of GDP?
- (d) What will happen to equilibrium GDP if exports remained at \$15 billion, but imports rose to \$15 billion?
- (e) What is the size of the multiplier in this economy?

Real GDP = DI (billions)	Aggregate expenditures (billions)	Exports (billions)	Imports (billions)	Net exports (billions)	Aggregate expenditures (billions)
\$ 80	\$100	\$15	\$5	\$10	\$110
120	130	15	5	10	140
160	160	15	5	10	170
200	190	15	5	10	200
240	220	15	5	10	230
280	250	15	5	10	260
320	280	15	5	10	290
360	310	15	5	10	320

- (a) For a closed economy, equilibrium GDP = \$160 billion.
- (b) For an open economy, equilibrium GDP = \$200 billion.
- (c) Equilibrium GDP would rise to \$240 billion.
- (d) Equilibrium GDP would fall to \$160 billion.
- (e) When aggregate expenditures change by 10, equilibrium GDP changes by 40 so the multiplier must be 8. [text: E pp. 186-188; MA pp. 186-188]

18. Explain the relationship between net exports and the following factors: prosperity abroad, tariffs on American exports abroad, depreciation of the American dollar on foreign exchange markets.

Prosperity abroad improves net exports because it means foreigners will buy more U.S. exports.

Tariffs on American exports abroad will initially decrease net exports as it makes American products more expensive to foreigners. (If the U.S. later retaliates with tariffs of its own, the effect is less certain.)

Depreciation of the American dollar should lead to improved net exports as foreigners will find the purchasing power of their money rising relative to goods priced in American dollars. Conversely, Americans will find foreign goods more expensive in terms of the dollars they need to exchange for foreign currency to buy foreign goods, so exports rise and imports fall. [text: E pp. 188-189; MA pp. 188-189]

19. Describe the probable impact of an increase in government spending assuming no change in taxes or private spending and less than full-employment output.

Assuming no change in taxes or private spending, the probable effect of an increase in government spending will be expansionary. Furthermore, the government spending increase will be multiplied in terms of its

impact on equilibrium GDP. The simple multiplier in this case should equal the reciprocal of the marginal propensity to save. [text: E pp. 189-190; MA pp. 189-190]

20. Identify the relationship between GDP, taxes, and disposable income.

Disposable income consists partly of income earned by resources used in producing the GDP minus the total taxes levied on productive incomes at the various production stages. Depreciation allowances and corporate retained earnings are also deducted from GDP and transfer payments are added to arrive at the figure for disposable income. [text: E pp. 191-192; MA pp. 191-192]

21. “If taxes and government spending are increased by the same amount, there will still be a positive effect on equilibrium GDP.” Explain.

The initial impact of government spending is to *increase* aggregate demand directly by the amount of the increase in spending. Beyond that, spending is increased in successive rounds of increased incomes that result by a fraction equal to the marginal propensity to consume. This MPC-induced spending which results from the increased government purchases will be exactly offset by the tax increase whose initial impact is to reduce disposable income rather than aggregate demand directly. Thus, government spending has an initial direct effect equal to the amount of the increase in G which will not be offset. [text: E pp. 193-194; MA pp. 193-194]

22. Compare and contrast the recessionary gap and the inflationary gap.

A recessionary gap is the amount by which aggregate expenditures fall short of the noninflationary full-employment level of GDP. Real GDP will be below full-employment real GDP by a multiple amount of the recessionary gap. An inflationary gap, on the other hand, is the amount by which aggregate expenditures exceeds the noninflationary full-employment level of GDP. This gap will cause demand-pull inflation as nominal GDP rises to meet the higher level of aggregate expenditures, but real GDP is already at its full-employment level. [text: E pp. 194-195; MA pp. 194-195]

23. If there is a recessionary gap of \$100 billion and the MPC is 0.80, by how much must taxes be reduced to eliminate the recessionary gap?

If the MPC is 0.80, then the MPS is 0.20 and the multiplier is equal to 5. Thus to reduce a gap of \$100 billion, taxes must be reduced by \$25 billion, which is equivalent to saying that disposable income rises by \$25 billion. An increase in income of \$25 billion will cause an initial change

in spending of \$20 billion (or $0.8 \times \$25$) and this multiplied by 5 will result in an increase in GDP of \$100 billion which is the amount of the recessionary gap. [text: E pp. 194-196; MA pp. 194-196]

24. Assume the level of investment is \$8 billion and independent of the level of total output. Complete the following table and determine the equilibrium level of output and income which the private sector of this closed economy would provide:

Possible employment levels (millions)	Real GDP = DI (billions)	Consumption (billions)	Saving (billions)
80	\$120	\$122	\$___
90	130	130	___
100	140	138	___
110	150	146	___
120	160	154	___
130	170	162	___
140	180	170	___
150	190	178	___
160	200	186	___

- (a) If this economy has a labor force of 140 million, will there be a recessionary or inflationary gap? Explain the consequences of this gap.
- (b) If the labor force is 110 million, will there be an inflationary or recessionary gap? Explain the consequences of this gap.
- (c) What are the sizes of the MPC, MPS, and multiplier in this economy?
- (d) Using the multiplier concept, give the increase in equilibrium GDP that would occur if the level of investment increased from \$8 billion to \$10 billion.

Possible employment levels (millions)	Real GDP = DI (billions)	Consumption (billions)	Saving (billions)
80	\$120	\$122	\$?2
90	130	130	0
100	140	138	2
110	150	146	4
120	160	154	6
130	170	162	8
140	180	170	10
150	190	178	12
160	200	186	14

(a) At the 140-million employment level, aggregate expenditures will be \$178 billion and output will be \$180 billion. Therefore, there exists a recessionary gap of \$2 billion. Producers plan output to match anticipated aggregate expenditures. If expenditures fall below this level of \$180 billion, then producer inventories will be greater than planned and they will reduce output until the actual inventories equal planned inventories for that level of output.

(b) At the 110-million employment level, aggregate expenditures will be \$154 billion and output will be \$150 billion. An inflationary gap exists because aggregate expenditures exceeds full-employment output and producers will attempt to expand output thinking full employment has not been reached. Expansion takes place because the level of planned output was set to match anticipated spending. Since aggregate spending exceeded this level of \$150 billion, producer inventories will be lower than planned and they will increase output to replenish these inventories.

(c) Consumption changes by \$8 billion for every \$10 billion change in DI. Therefore, the MPC is 8/10 or 0.8. MPS = 0.2. Multiplier will be $1/0.2 = 5$.

(d) If investment spending rises by \$2 billion, then equilibrium GDP should rise by $5 \times \$2$ billion or \$10 billion. [text: E pp. 194-196; MA pp. 194-196]

25. Assume the level of investment is \$8 billion and independent of the level of total output. Complete the following table and determine the equilibrium level of output and income which the private sector of this closed economy would provide:

Possible employment levels (millions)	Real GDP = DI (billions)	Consumption (billions)	Saving (billions)
50	\$ 80	\$ 83	\$___
60	90	90	___
70	100	97	___
80	110	104	___
90	120	111	___
100	130	118	___
110	140	125	___
120	150	132	___
130	160	139	___

(a) If this economy has a labor force of 110 million, will there be a recessionary or inflationary gap? Explain the consequences of this gap.

(b) If the labor force is 80 million, will there be an inflationary or recessionary gap? Explain the consequences of this gap.

(c) What are the sizes of the MPC, MPS, and multiplier in this economy?

(d) Using the multiplier concept, give the increase in equilibrium GDP that would occur if the level of investment increased from \$8 billion to \$10 billion.

Possible employment levels (millions)	Real GDP = DI (billions)	Consumption (billions)	Saving (billions)
50	\$ 80	\$ 83	\$? 3
60	90	90	0
70	100	97	3
80	110	104	6
90	120	111	9
100	130	118	12
110	140	125	15
120	150	132	18
130	160	139	21

(a) At the 110-million employment level, aggregate expenditures will be \$132 billion and full-employment output will be \$140 billion. Therefore, there exists a recessionary gap of \$7 billion. Producers plan output to match anticipated aggregate expenditures. If expenditures fall below this level of \$140 billion, then producer inventories will be greater than planned and they will reduce output until the actual inventories equal planned inventories for that level of output.

(b) At the 80-million employment level, aggregate expenditures will be \$112 billion and full-employment output will be \$110 billion. An inflationary gap exists because aggregate expenditures exceeds full-employment output and producers will attempt to expand output thinking full employment has not been reached. Expansion takes place because the level of planned output was set to match anticipated spending. Since aggregate spending exceeded this level of \$110 billion, producer inventories will be lower than planned and they will increase output to replenish these inventories.

(c) Consumption changes by \$7 billion for every \$10 billion change in DI. Therefore, the MPC is $7/10$ or 0.7. $MPS = 0.3$, multiplier will be $1/0.3 = 3 \frac{1}{3}$.

(d) If investment spending rises by \$2 billion, then equilibrium GDP should rise by $3 \frac{1}{3} \times \$2$ billion or $\$6 \frac{2}{3}$ billion. [text: E pp. 194-196; MA pp. 194-196]

New 26. Refer to the following table to answer the questions.

(1) Possible levels of employment, millions	(2) Real domestic output, billions	(3) Aggregate Expenditures, ($C_a + I_g + X_n + G$) billions
45	\$250	\$260
50	275	280
55	300	300
60	325	320
65	350	340

- (a) If full employment in this economy is 65 million, will there be an inflationary or recessionary gap? What will be the consequence of this gap? By how much would aggregate expenditures in column 3 have to change at each level of GDP to eliminate the inflationary or recessionary gap? Explain.
- (b) Will there be an inflationary or recessionary gap if the full-employment level of output is \$250 billion? Explain the consequences. By how much would aggregate expenditures in column 3 have to change at each level of GDP to eliminate the inflationary or recessionary gap? Explain.
- (c) Assuming that investment, net exports, and government expenditures do not change with changes in real GDP, what are the sizes of the MPC, the MPS, and the multiplier?
- (a) A recessionary gap. Equilibrium GDP is \$300 billion, while full employment GDP is \$350 billion. Employment will be 10 million less than at full employment. Aggregate expenditures would have to increase by \$10 billion (= \$350 billion – \$340 billion) at each level of GDP to eliminate the recessionary gap.
- (b) An inflationary gap. Aggregate expenditures will be excessive, causing demand-pull inflation. Aggregate expenditures would have to *fall* by \$10 billion (= \$260 billion – \$250 billion) at each level of GDP to eliminate the inflationary gap.
- (c) MPC = .8 (= \$20 billion/\$25 billion); MPS = .2 (= 1 – .8); multiplier = 5 (= 1/.2).
[text: E pp. 194-196; MA pp. 194-196]

27. Use the table below to answer the following questions:

<u>Real GDP</u>	<u>C</u>
\$500	\$495
510	504
520	513
530	522
540	531
550	540
560	549

- (a) What is the size of the multiplier in this economy?
- (b) If taxes were zero, government purchases were \$5, investment is \$3, and net exports are zero, what is the equilibrium GDP?
- (c) If taxes are \$10, government purchases are \$10, investment is \$6, and net exports are zero, what is the equilibrium GDP?
- (d) Assume investment is \$50, taxes are \$50, and net exports and government purchases are each zero. The full-employment level of GDP is \$545. How much of a reduction in taxes is needed to eliminate the recessionary gap?
- (e) Assume that investment, net exports, and taxes are zero. Government purchases are \$30 and the full-employment GDP without inflation is \$530. By how much must government spending be reduced to eliminate the inflationary gap?
- (a) To find the MPC compare the change in C with the change in GDP to get $9/10$ or 0.9 ; this means the MPS is 0.1 and the multiplier will be $1/0.1$ or 10 .
- (b) Find the point where aggregate expenditures equals GDP. Aggregate expenditures will include C plus investment and government purchases which together equal \$8. Adding \$8 to C at every level gives an equilibrium GDP of \$530 ($= 522 + 8$).
- (c) If taxes are \$10, GDP is reduced by \$10 at every level to result in disposable income. Since the MPC is 0.9 , we can calculate C at every level by reducing each level of C by \$9 ($.9 \times \10). This will result in an aggregate expenditures of \$520 ($504 + 10 + 6$) and an equilibrium GDP of \$520.
- (d) If taxes are \$50 and the MPC is 0.9 , C will be reduced at every level by \$45. Currently, the equilibrium GDP will be \$500 ($495 - 45 + 50 = AE$). To increase it by \$45 will require an increase in consumer spending of \$45. To achieve an increase in consumer spending of \$45 requires an

increase in disposable income of \$50. Therefore, taxes must be reduced from \$50 to zero.

(e) In this case the equilibrium nominal GDP will be \$560. To reduce it to \$530, aggregate expenditures must be reduced by \$30, hence government purchases must be reduced by \$30. [text: E pp. 182-193; MA pp. 182-193]

28. Use the table below to answer the following questions:

Real GDP	<i>C</i>
\$300	\$290
310	298
320	306
330	314
340	322
350	330
360	338

- (a) What is the size of the multiplier in this economy?
- (b) If taxes were zero, government purchases were \$10, investment \$6, and net exports are zero, what is the equilibrium GDP?
- (c) If taxes are \$5, government purchases are \$10, investment is \$6, and net exports are zero, what is the equilibrium GDP?
- (d) Assume investment is \$50, taxes are \$50, net exports and government purchases are each zero. The full-employment level of GDP is \$340. How much of a reduction in taxes is needed to eliminate the recessionary gap?
- (e) Assume that investment, net exports, and taxes are zero. Government purchases are \$30 and the full-employment GDP without inflation is \$330. By how much must government spending be reduced to eliminate the inflationary gap?
- (a) To find the MPC compare the change in *C* with the change in GDP to get 8/10 or 0.8; this means the MPS is 0.2 and the multiplier will be 1/.2 or 5.
- (b) Find the point where aggregate expenditures equals GDP. Aggregate expenditures will include *C* plus investment and government purchases which together equal \$16. Adding \$16 to *C* at every level gives an equilibrium GDP of 330 (= 314 + 16).
- (c) If taxes are \$5, GDP is reduced by \$5 at every level to result in disposable income. Since the MPC is 0.8, we can calculate *C* at every level by reducing each level of *C* by \$4 (.8 x \$5). This will result in an

aggregate expenditures of \$310 ($294 + 10 + 6$) and an equilibrium GDP of \$310.

(d) If taxes are \$50 and the MPC is 0.8, C will be reduced at every level by \$40. Currently the equilibrium GDP will be \$300 ($290 - 40 + 50 = AE$). To increase it by \$40 will require an increase in consumer spending of \$40. To achieve an increase in consumer spending of \$40 requires an increase in disposable income of \$50. Therefore, taxes must be reduced from \$50 to zero.

(e) In this case the equilibrium nominal GDP will be \$360. To reduce it to \$330, aggregate expenditures must be reduced by \$30, hence government purchases must be reduced by \$30. [text: E pp. 182-196; MA pp. 182-196]

29. Discuss an historical application of a recessionary and an historical application of an inflationary gap in the United States.

The Great Depression of the 1930s is an example of a recessionary (depressionary) gap. Output fell from \$791 billion in 1929 to \$577 billion in 1933 (1992 dollars). Unemployment rose from 3.2% in 1929 to 24.9% in 1933. One of the key factors contributing to the economic slump was the decline in investment by about 89%. In terms of the aggregate expenditures model, the decline in investment and the decline in consumer spending would cause aggregate expenditures to shift downward. The new equilibrium was below the full-employment level of output for the economy, thus creating the recessionary (or depressionary) gap.

The Vietnam War inflation is an example of an inflationary gap. The increased government spending for the Vietnam War and increased spending on social programs for the Great Society caused government expenditures to increase. In addition, taxes had been cut during the period, thus adding to the upward pressure on consumption and investment spending. The combination of forces (C , I , and G) shifted the aggregate expenditures upward over the Vietnam War period. Equilibrium occurred beyond the full-employment level of output, thus creating inflationary pressures in the economy. [text: E pp. 196-197; MA pp. 196-197]

30. What happened to investment spending during the Great Depression? What factors contributed to this situation?

A steep decline in investment spending was one of the major reasons the economy sank into depression during the 1930s. Gross investment spending dropped 90 percent in real terms.

The factors contributing to this decline were several. First, businesses had overexpanded during the 1920s for the size of the market, which contributed to a rise in business indebtedness. Businesses did not have the funds to spend much on new investment. Second, there was also a decline in residential construction after the boom of the early-to-mid 1920s. Residential construction is a component of investment spending. Third, the stock market crash of 1929 deflated the extreme business optimism and eliminated most interest in new capital investment. A fourth factor that contributed to the Great Depression was a decline in the money supply. The tightening of monetary policy by the Federal Reserve contributed to the reduction in investment spending because it reduced aggregate expenditures. [text: E pp. 196-197; MA pp. 196-197]

31. What are four shortcomings of the aggregate expenditures model?

First, although the model can account for demand-pull inflation, it does not indicate how much the price level will rise when aggregate expenditures are greater than the productive capacity of the economy. Second, the aggregate expenditure model does not explain why demand-pull inflation can occur before the economy reaches its full-employment level of output. Third, the aggregate expenditures model does not explain why the economy can expand beyond its full-employment level of output. Fourth, the aggregate expenditures model does not account for cost-push inflation. [text: E p. 198; MA p. 198]

32. (Advanced analysis) Assume that without any taxes the consumption schedule for an economy is as shown in the table:

<u>GDP (billions)</u>	<u>Consumption (billions)</u>
\$ 200	\$ 240
400	400
600	560
800	720
1,000	880
1,200	1,040
1,400	1,200

(a) Graph the consumption schedule and note the size of the MPC and multiplier using the below graph.

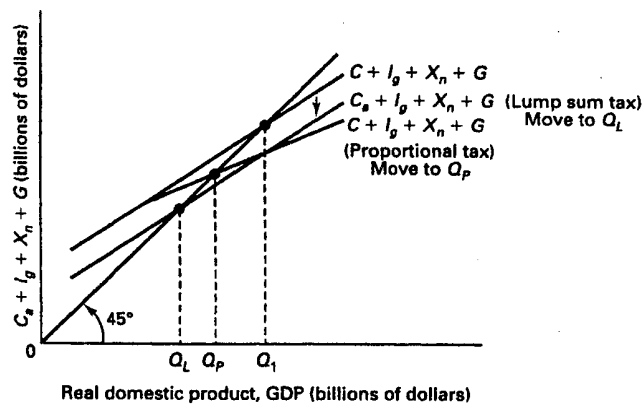
(b) Assume a lump-sum regressive tax of \$10 billion is imposed at all levels of GDP. Calculate the tax rate at each level of GDP and graph the resulting consumption schedule. Compare the MPC and the multiplier with the pretax consumption schedule. MPC and the multiplier are unchanged.

(c) Explain why a proportional or progressive tax system would contribute to greater economic stability as compared with the regressive lump-sum tax. Demonstrate graphically using a 10% proportional tax.

(a) The size of the MPC = $160/200 = 0.80$. See graph below.

(b) The tax rate will be regressive: At \$400, 2.5%; at \$600, 1.67%; at \$800, 1.25%; at \$1000, 1%; at \$1200, 0.835%; at \$1400, 0.71%.

(c) A proportional or progressive tax system would not take such a big bite out of low incomes as a regressive tax system does, and as incomes rose it would take out more proportionately than a regressive, lump-sum tax does. Thus, proportional or progressive taxes leave more disposable income for spending during low-income periods and would reduce



disposable income and spending during expansionary phases. See graph below. [text: E pp. 182-193; MA pp. 182-193]

New 33. (Last Word) Describe the events “Squaring the Economic Circle” and explain how they illustrate the multiplier.

Humorist Art Buchwald illustrates the multiplier with this funny essay that shows how the effect of one economic event on one party has an effect on a second party. These effects on the second party, in turn, have an effect on a third party, and so forth, creating a ripple throughout the economy. These related and multiple effects serve to illustrate the multiplier.

Hofberger, a Chevy salesman in Tomcat, VA, called up Littleton of Littleton Menswear & Haberdashery, and told him that a new Nova had been set aside for Littleton and his wife. Littleton said he was sorry, but he couldn't buy a car because he and Mrs. Littleton were getting a divorce. Soon afterward, Bedcheck the painter called Hofberger to ask when to begin painting the Hofbergers' home. Hofberger said he couldn't, because Littleton was getting a divorce, not buying a new car, and, therefore, Hofberger could not afford to paint his house. When Bedcheck went home that evening, he told his wife to return their new television set to Gladstone's TV store. When she returned it the next day, Gladstone immediately called his travel agent and canceled his trip. He said he couldn't go because Bedcheck returned the TV set because Hofberger didn't sell a car to Littleton because Littletons are divorcing. Sandstorm, the travel agent, tore up Gladstone's plane tickets, and immediately called his banker, Gripsholm, to tell him that he couldn't pay back his loan that month. When Rudemaker came to the bank to borrow money for a new kitchen for his restaurant, the banker told him that he had no money to

Aggregate Expenditures: The Multiplier, Net Exports, and Government

lend because Sandstorm had not repaid his loan yet. Rudemaker called his contractor, Eagleton, who had to lay off eight men. General Motors announced it would give a rebate on its new models. Hofberger called Littleton to tell him that he could probably afford a car even with the divorce. Littleton said that he and his wife had made up and were not divorcing. His business, however, was so lousy that he couldn't afford a car now. His regular customers, Bedcheck, Gladstone, Sandstorm, Gripsholm, Rudemaker, and Eagleton had not been in for over a month. [text: E p. 199; MA p. 199]