The Professor's Treatise on Multipliers

MULTIPLIER FORMULAS AND TERMS

Marginal propensity to consume (MPC) = change in consumption divided by change in income

Marginal propensity to save (MPS) = change in saving divided by change in income

Investment Multiplier = 1 /(1 – MPC) or simply 1 /MPS

How to use the investment multiplier: change in GDP = change in investment times investment multiplier

When to use the investment multiplier: when there is a change in investment such as a new factory or new equipment

Government Spending Multiplier = 1 /(1 – MPC) or simply 1 /MPS

How to use the government spending multiplier: change in GDP = change in government spending times government spending multiplier

When to use the government spending multiplier: when there is a change in government spending such as a new road or bridge

Tax Multiplier = – MPC /(1 – MPC) = – MPC /MPS

How to use the tax multiplier: change in GDP = change in taxes times tax multiplier

When to use the tax multiplier: when there is a change in lump-sum taxes. Remember that the tax multiplier has a negative sign.

Figure 21.2
Multiplier Table
(Derived from using the formulas above)

MPC	Investment Multiplier	Government Spending Multiplier	Tax Multiplier
0.90	10.0	10.0	–9.0
0.80	5.0	5.0	–4.0
0.75	4.0	4.0	–3.0
0.60	2.5	2.5	–1.5
0.50	2.0	2.0	–1.0

"ALWAYS" RULES (A surefire way to remember multipliers)

- The investment multiplier is *always* equal to the same value as the government spending multiplier.
- The investment and government spending multipliers are *always* positive.
- The tax multiplier is *always* negative.

The King took the treatise and had it printed for every islander. He then ordered the old professor to make up a series of questions to see if the subjects understood the multiplier.

Answer the questions on the professor's test.

The Econoland Test

1. What is the value of the tax multiplier if the MPC is 0.80? _____
2. What is the value of the government spending multiplier if the MPC is 0.67? _____
3. What is the tax multiplier if the MPS is 0.25? _____
4. How could the multiplier be used to explain wide swings in income (which could be called business cycles) in Econoland?

5. The numerical value for the investment and government spending multiplier increases as the
   (A) value of the marginal propensity to save decreases.
   (B) value of the average propensity to consume increases.
   (C) value of the marginal propensity to consume decreases.
   (D) value of the marginal propensity to save increases.
   (E) value of the average propensity to consume decreases.

6. If the government spending multiplier is 5 in Econoland, the value of the tax multiplier must be
   (A) 5
   (B) 4
   (C) 1
   (D) – 4
   (E) – 5

Econoland has the following values for income and consumption. Use this data to answer questions 7, 8 and 9.

Income	Consumption
100	150
200	225
300	300
400	375
500	450
600	525

7. The government spending multiplier in Econoland is
   (A) 3
   (B) 4
   (C) 5
   (D) 10
   (E) 30

8. If there is an increase in taxes of $200 in Econoland, the decrease in GDP will be
   (A) $100
   (B) $200
   (C) $400
   (D) $600
   (E) $800

9. If there is an increase in government spending of $100 and an increase in taxes of $100 in Econoland, then the change in GDP will be
   (A) $50
   (B) $100
   (C) $200
   (D) –$100
   (E) –$200

10. Why do the people of Econoland need to understand multipliers?