

# 24 The Multiplier

MODULE

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# The Multiplier: An Informal Introduction

- Four simplifying assumptions
  1. Producers are willing to supply output at a fixed price
  2. Interest rate is given
  3. No government spending or taxes
  4. Exports and import are zero

# The Multiplier: An Informal Introduction

- The **marginal propensity to consume**, or **MPC**, is the increase in consumer spending when disposable income rises by \$1.
- The **marginal propensity to save**, or **MPS**, is the increase in household savings when disposable income rises by \$1.

$$MPC = \frac{\Delta \text{ Consumer spending}}{\Delta \text{ Disposable income}}$$

# The Multiplier: An Informal Introduction

- Increase in investment spending = \$100 billion
  - + Second-round increase in consumer spending  
=  $\text{MPC} \times \$100$  billion
  - + Third-round increase in consumer spending  
=  $\text{MPC}^2 \times \$100$  billion
  - + Fourth-round increase in consumer spending  
=  $\text{MPC}^3 \times \$100$  billion



- **Total increase in real GDP**  
**=  $(1 + \text{MPC} + \text{MPC}^2 + \text{MPC}^3 + \dots) \times \$100$  billion**

# The Multiplier: An Informal Introduction

- The \$100 billion increase in investment spending sets off a chain reaction in the economy.
- The net result of this chain reaction is that a \$100 billion increase in investment spending leads to a change in real GDP that is a *multiple* of the size of that initial change in spending.

$$\begin{aligned} & \text{Total increase in real GDP from \$100 billion rise in } I \\ &= \frac{1}{1 - MPC} \times \$100 \text{ billion} \end{aligned}$$

# The Multiplier: Numerical Example

## Rounds of Increases of Real GDP When $MPC = 0.6$

	Increase in real GDP (\$ billions)	Total increase in real GDP (\$ billions)
First round	100	100
Second round	60	160
Third round	36	196
Fourth round	21.6	217.6
...	...	...
Final round	0	250

# The Multiplier: Numerical Example

- In the end, real GDP rises by \$250 billion as a consequence of the initial \$100 billion rise in investment spending:

$$\begin{aligned} & 1/(1 - 0.6) \times \$100 \text{ billion} \\ & = 2.5 \times \$100 \text{ billion} \\ & = \$250 \text{ billion} \end{aligned}$$



# The Multiplier and the Great Depression

- The concept of the multiplier was originally devised by economists trying to understand the Great Depression. Most economists believe that the slump from 1929 to 1933 was driven by a collapse in investment spending.
- But as the economy shrank, consumer spending also fell sharply, multiplying the effect on real GDP.
- In the modern U.S. economy, taxes and government spending are much higher than in 1929 and act as *automatic stabilizers*, reducing the size of the multiplier.

# The Multiplier and the Great Depression

**TABLE 24-2**

Investment Spending, Consumer Spending, and Real GDP in the Great Depression (billions of 2005 dollars)

	1929	1933	Change
Investment spending	\$101.4	\$18.9	-\$82.5
Consumer spending	736.3	600.8	-135.5
Real GDP	976.1	715.8	-260.3

Source: Bureau of Economic Analysis.